

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A process for preparing oligomers consisting mainly of repeating units derived from 1- or 2-butene from a hydrocarbon stream consisting substantially of branched and linear hydrocarbon compounds having 4 carbon atoms, and comprising olefinic branched and linear hydrocarbon compounds having 4 carbon atoms (C₄ starting stream) by:

- a. ~~in step a)~~, separating the C₄ starting stream into a fraction consisting mainly of linear hydrocarbon compounds having 4 carbon atoms (l-C₄ fraction) and a fraction consisting mainly of branched hydrocarbon compounds having 4 carbon atoms (b-C₄ fraction), by contacting the C₄ starting stream with a membrane which is easier to pass for linear hydrocarbon compounds having 4 carbon atoms than for branched carbon compounds having 4 carbon atoms[[,]];
- b. ~~in step b)~~, optionally after removing butanes, oligomerizing the olefinic hydrocarbon compounds having 4 carbon atoms present in the l-C₄ fraction[[,]];
- c. ~~in step c)~~, subjecting the olefinic hydrocarbon compounds having 4 carbon atoms present in the b-C₄ fraction to one of the following steps:
 - c1. reaction with methanol to give methyl tert-butyl ether; ~~(step e1)~~
 - c2. hydroformylation to give substantially isovaleraldehyde; ~~(step e2)~~
 - c3. polymerization to polyisobutylene; ~~(step e3)~~
 - c4. dimerization to 2,4,4-trimethyl-1-pentene; and ~~(step e4)~~
 - c5. alkylation, substantially to form saturated hydrocarbon compounds having 8 or 9 carbon atoms ~~(step e5)~~.

Claim 2 (Currently Amended): A process as claimed in claim 1, wherein the membrane used ~~in step a)~~ is made of inorganic material having molecular sieve properties.

Claim 3 (Currently Amended): A process as claimed in claim 1 ~~or 2~~, wherein the membrane used ~~in step a)~~ consists at least partly of zeolites of the MFI type.

Claim 4 (Currently Amended): A process as claimed in claim 1 ~~any of claims 1 to 3~~, wherein the separation in step a) is carried out in such a way that the C₄ starting stream in liquid or gaseous form is contacted with the membrane and the I-C₄ fraction passing the membrane is removed in gaseous form, and the pressure on the side of the membrane on which the C₄ starting stream is disposed is greater than the pressure on the side of the I-C₄ fraction.

Claim 5 (Currently Amended): A process as claimed in claim 1 ~~any of claims 1 to 4~~, wherein the C₄ starting stream used consists substantially of:

- from 30 to 99% by weight of olefinic branched and linear hydrocarbon compounds having 4 carbon atoms;
- optionally from 1 to 70% by weight of saturated branched and linear hydrocarbon compounds having 4 carbon atoms;
- optionally up to 50% by weight of any other unsaturated hydrocarbon compounds having 4 carbon atoms; and
- optionally from 0 to 50% by weight of any hydrocarbon compounds having less than 4 or more than 4 carbon atoms.

Claim 6 (Currently Amended): A process as claimed in claim 5, wherein the C₄ starting stream is prepared by carrying out the following sequence of steps:

- removing a C₄ hydrocarbon fraction (~~C₄ stream~~ C₄ stream) from a hydrocarbon stream from natural sources or obtainable by subjecting naphtha or other mixtures which consist essentially of hydrocarbons to a steam cracking or FCC process[[],];
- preparing a C₄ hydrocarbon stream consisting substantially of isobutene, 1-butene, 2-butene and butanes (raffinate I) from ~~C₄ stream~~ C₄ stream by hydrogenating the butadienes and butynes to C₄-alkenes or C₄-alkanes by means of selective hydrogenation or removing the butadienes and butynes by extractive distillation[[],]; and
- freeing raffinate I of catalyst poisons by treating with adsorbent materials and in this way obtaining C₄ starting stream.

Claim 7 (Currently Amended): A process as claimed in claim 1 ~~any of claims 1 to 6~~, wherein, in step b, the I-C₄ fraction is converted mainly to octenes and dodecenes over a nickel catalyst.

Claim 8 (Currently Amended): A process as claimed in claim 1 ~~any of claims 1 to 7~~, wherein, in step b, the removal of butanes is effected distillatively.

Claim 9 (Original): A process as claimed in claim 7, wherein the octenes or dodecenes are converted to nonanol or tridecanol by hydroformylation and subsequent hydrogenation.